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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BATTAGLIA, MICHAEL V	
ART UNIT	**PAPER NUMBER**
2652	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/028,979	CHO ET AL.	
	Examiner	Art Unit	
	Michael V. Battaglia	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6,8-11 and 13-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,6,9-11 and 13-16* is/are rejected.

7)☒ Claim(s) *4,5 and 8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 19, 2005 has been entered.

2. The indicated allowability of claims 1, 3-6 and 8-11 is withdrawn in view of the newly discovered reference to Kim (US 2002/0141303). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-6, 8-11 and 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim (US 2002/0141303).

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

In regard to claims 1 and 15, Kim discloses an eccentricity compensation apparatus of a disk drive servo system having an actuator (Fig. 5, element 40) actuating a head (Fig. 5, element 20) to a position on a disk (Fig. 5, element 10) rotated by a spindle (Fig. 5, element 80) to read data on or reproduce data from the disk, the apparatus comprising: an error detector (Fig. 5, element 50) that detects a position error (Fig. 5, element TE) between a reference head position and an actual position of the head on the disk; a first compensation controller (Fig. 5, element 70) that receives the position error from the error detector and generates and outputs a first control value (Fig. 5, element TC) to compensate for the position error by changing the actual position of the head (Paragraph[0034], lines 6-9); a second compensation controller (Fig. 5, element 1000 excluding Fig. 6, element 1047) that generates and outputs a second control value (Fig. 6, element ECO) to compensate for eccentricity which varies depending on a phase of the spindle that rotates the disk (Figs. 5 and 6, elements FG_C and FG_E); and a gain/phase adjuster (Fig. 6, element 1047) that adjusts gain and phase of the second control value output from the second compensation controller according to a reproduction speed of the disk (Paragraph[0038], lines 8-11 and Paragraph[0045], lines 8-14), wherein a drive signal (Fig. 5, element TRD) of the actuator is obtained by summing the signals output from the first compensation controller and the gain/phase adjuster (Fig. 5, element 1030 and Paragraph[0036], lines 15-19); wherein the second compensation controller comprises a feedforward look-up table (Fig. 6, element 1045) that stores control data estimated at a predetermined reproduction speed (Paragraph[0039], lines 11-15 and Paragraph[0051], lines 4-7) and used for compensating the eccentricity via the gain and phase adjustment; wherein the gain/phase adjuster compensates for gain reduction and phase lag in frequency response characteristics of the actuator based on the control data in the feedforward look-up table estimated at a predetermined reproduction speed (Paragraph[0045], lines 8-14),

without updating the control data in the feedforward look-up table each time the reproduction speed changes (Paragraph[0048], lines 11-14 and Paragraph[0051], lines 4-7).

In regard to claim 3, Kim discloses that the gain/phase adjuster adjusts the gain and phase of the second control value output from the second compensation controller according to the disk reproduction speed based on frequency response characteristics of the actuator (Paragraph[0045], lines 8-14).

In regard to claim 6, Kim discloses that the position error between the reference head position and the actual position of the head on the disk corresponds to a displacement of the actuator (Paragraph[0034], lines 1-3). It is noted that the actuator displaces the head to position the head on the disk. Any error in the positioning of the head would then inherently correspond to a displacement of the actuator.

In regard to claims 9 and 16, Kim discloses a method of eccentricity compensation of a disk drive servo system having an actuator (Fig. 5, element 40) actuating a head (Fig. 5, element 20) to a position on a disk (Fig. 5, element 10) rotated by a spindle (Fig. 5, element 80) to read data on or reproduce data from the disk, the method comprising: detecting a position error (Fig. 5, element TE) between a reference head position and an actual position of the head on the disk (Fig. 5, element 50 and Paragraph[0034], lines 1-3); receiving the position error, and generating and outputting a first control value (Fig. 5, element TC) to compensate for the position error by changing the actual position of the head (Fig. 5, element 70 and Paragraph[0034], lines 6-9); generating and outputting a second control value (Fig. 6, element ECO) to compensate for eccentricity which varies depending on a phase of the spindle that rotates the disk (Figs. 5 and 6, elements FG_C and FG_E and Paragraph[0038]); adjusting gain and phase of the second control value according to a reproduction speed of the disk (Fig. 6, element 1047; Paragraph[0038], lines

8-11; and Paragraph[0045], lines 8-14), thereby obtaining a signal (Fig. 5, element TRD) to drive the actuator from a summation of the first control value and the adjusted second control value (Fig. 5, element 1030 and Paragraph[0036], lines 15-19); and compensating gain reduction and phase lag in frequency response characteristics of the actuator based on control data in a feedforward look-up table (Fig. 6, element 1045) estimated at a predetermined reproduction speed, without updating the control data in the feedforward look-up table each time the reproduction speed changes (Paragraph[0045], lines 8-14; Paragraph[0048], lines 11-14; and Paragraph[0051], lines 4-7).

In regard to claim 10, Kim discloses that the method further comprises storing control data estimated at a predetermined reproduction speed and used for the compensating of the eccentricity via the gain and phase adjustment (Figs. 5 and 6 and Paragraph[0039], lines 11-15 and Paragraph[0051], lines 4-7).

In regard to claim 11, Kim discloses that the adjusting of the gain and phase of the second control value according to the disk reproduction speed is based on frequency response characteristics of the actuator (Paragraph[0045], lines 8-14).

In regard to claim 13, Kim discloses an eccentricity compensation apparatus of a disk drive servo system having an actuator (Fig. 5, element 40) actuating a head (Fig. 5, element 20) to a position on a disk (Fig. 5, element 10) rotated by a spindle (Fig. 5, element 80) to read data on or reproduce data from the disk, the apparatus comprising: a controller (Fig. 5, elements 70 and 1000 excluding Fig. 6, element 1047) generating and outputting first (Fig. 5, element TC) and second (Fig. 6, element ECO) control values, the second control value being based on estimated control data at a predetermined reproduction speed of the disk and being used to compensate for eccentricity at varying reproduction speeds depending on a phase of the spindle (Figs. 5 and 6,

elements FG_C and FG_E and Paragraph[0038]); and a gain/phase adjuster (Fig. 6, element 1047) adjusting a gain and a phase of the second control value based on the control data at a reproduction speed of the disk based on frequency response characteristics of the actuator (Paragraph[0038], lines 8-11 and Paragraph[0045], lines 8-14), without updating the control data each time the reproduction speed changes (Paragraph[0048], lines 11-14 and Paragraph[0051], lines 4-7), wherein a drive signal (Fig. 5, element TRD) of the actuator is obtained by summing the first control value and the adjusted second control value (Fig. 5, element 1030 and Paragraph[0036], lines 15-19).

In regard to claim 14, Kim discloses a method of compensating for eccentricity of a disk drive servo system having an actuator (Fig. 5, element 40) actuating a head (Fig. 5, element 20) to a position on a disk (Fig. 5, element 10) rotated by a spindle (Fig. 5, element 80) to read data on or reproduce data from the disk, the method comprising: generating and outputting first (Fig. 5, element TC) and second (Fig. 6, element ECO) control values, the second control value being based on estimated control data at a predetermined reproduction speed of the disk and being used to compensate for eccentricity at varying reproduction speeds depending on a phase of the spindle (Figs. 5 and 6, elements FG_C and FG_E and Paragraph[0038]), and adjusting gain and phase of the second control value based on the control data at a reproduction speed of the disk based on frequency response characteristics of the actuator (Paragraph[0038], lines 8-11 and Paragraph[0045], lines 8-14), without updating the control data each time the reproduction speed changes (Paragraph[0048], lines 11-14 and Paragraph[0051], lines 4-7), wherein a drive signal of the actuator is obtained by summing the first control value and the adjusted second (Fig. 5, element 1030 and Paragraph[0036], lines 15-19).

Allowable Subject Matter

4. Claims 4, 5 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regard to claim 4, none of the references of record alone or in combination suggest or fairly teach the apparatus including all the limitations of claim 1 and wherein the first compensation controller comprises a phase lead-lag controller to obtain the first control value.

In regard to claim 5, none of the references of record alone or in combination suggest or fairly teach the apparatus including all the limitations of claim 1 and wherein the first compensation controller is a feedback controller that receives a reference signal and an actual signal of the actuator which corresponds to the actual position of the head, to perform a compensation control using the received signals.

In regard to claim 8, none of the references of record alone or in combination suggest or fairly teach the apparatus including all the limitations of claim 1 and wherein the control data in the feedforward look-up table used for the compensating of the eccentricity is obtained by using: 2 $U_{ff}(s) = D(s)/G(s)$, wherein, $U_{ff}(s)$ and $D(s)$ denote the control data and the eccentricity, respectively, and $G(s)$ denotes a transfer function indicating the frequency response characteristics of the actuator.

Response to Arguments

5. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Battaglia whose telephone number is (571) 272-7568. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Battaglia

BRIAN E. MILLER
PRIMARY EXAMINER